

WHAT IS CLAIMED IS:

1. A machine for lathing a workpiece comprising:
a first carriage having means thereon for rotational motion of said workpiece about
an axis;
means for guiding said first carriage for reciprocal motion of said workpiece in a
direction transverse to said axis;
a second carriage having means thereon for lathing said workpiece;
means for guiding said second carriage for reciprocal motion of said lathing means
in a direction parallel to said axis; and
computer means for coordinating said workpiece rotational motion, said workpiece
reciprocal motion and said lathing means reciprocal motion to infeed said workpiece along
said transverse direction to said lathing means at a nominal rate to lathe said workpiece
to a predetermined shape and to reciprocate said workpiece along said transverse
direction at an oscillatory rate to segment swarf removed from said workpiece by said
lathing means.

2. A machine according to claim 1, said oscillatory reciprocation being a sine
wave motion relative to said transverse direction.

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3. A machine according to claim 2, said sine wave motion having an amplitude
substantially equal to one half said nominal infeed rate.

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1 4. A machine according to claim 2, said sine wave motion being equal to 0.5
2 $\times I \times \sin [\theta \times (N + 0.5)]$ where I is said nominal infeed rate, θ is an angular position of
3 said workpiece in relation to a zero reference and N is any integer greater than zero.

1 5. A machine according to claim 2, said sine wave motion having a frequency
2 equal to $(0.5 + N) \times W$ where N is any integer greater than zero and W is the rotational
3 frequency of said workpiece.

1 6. A machine according to claim 1, said ~~(computer)causing~~ said lathing means
2 to describe a path about said axis from an outer edge of said workpiece to a center of
3 said workpiece having a spiral component about said axis resulting from said nominal
4 infeed and an oscillatory component superimposed on said spiral component resulting
5 from said oscillatory reciprocation.

1 7. A machine according to claim 6, said oscillatory component of each
2 sequential 360 degree segment of said spiral path having maxima substantially coincident
3 with minima of an immediately preceding 360 degree segment of said spiral.

1 8. A machine according to claim 7, said lathing means and said workpiece
2 being spaced apart when said lathing means is aligned with said maxima.